

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

- 1 1. (original) A method of optimizing spare component management for a network  
2 having a plurality of nodes, comprising:  
3 obtaining availability parameters associated with an inventory of spare  
4 components; and  
5 determining a plurality of management configurations in response to said  
6 availability parameters, each of said plurality of management configurations comprising  
7 at least one warehouse node selected from said plurality of nodes and a quantity of spare  
8 components in said inventory to be stored at said at least one warehouse node.
- 1 2. (original) The method of claim 1, further comprising:  
2 selecting at least one warehouse configuration for said plurality of nodes; and  
3 repeating said determining step for each said warehouse configuration.
- 1 3. (original) The method of claim 2, wherein said at least one warehouse  
2 configuration comprises a distributed warehouse configuration and a centralized  
3 warehouse configuration.
- 1 4. (original) The method of claim 1, wherein said inventory of spare components is  
2 defined by a plurality of component types, and said availability parameters comprise at  
3 least one of a failure rate, a minimum repair time, a restocking time, and a stockout  
4 probability associated with each of said plurality of component types.
- 1 5. (original) The method of claim 4, further comprising:  
2 for each of said plurality of management configurations, computing an expected  
3 downtime of said network using said minimum repair time associated with at least one of  
4 said plurality of component types.

1 6. (original) The method of claim 5, wherein, for each of said plurality of  
2 management configurations, said expected downtime of said network is further computed  
3 using delivery times from said at least one warehouse node to remaining ones of said  
4 plurality of nodes.

1 7. (original) The method of claim 4, further comprising:  
2 obtaining a critical repair time associated with each of said plurality of component  
3 types; and  
4 for each of said plurality of management configurations, computing a number of  
5 expected critical repair time violations.

1 8. (original) The method of claim 4, wherein said determining comprises:  
2 obtaining a target stockout probability for each of said plurality of component  
3 types;  
4 for each of said plurality of management configurations, computing said quantity  
5 of spare components to be stored at said at least one warehouse node by adjusting a  
6 quantity of each of said plurality of component types until said respective stockout  
7 probability is less than or equal to said respective target stockout probability.

1 9. (original) The method of claim 1, wherein said inventory of spare components is  
2 obtained dynamically from said network.

1 10. (original) The method of claim 1, wherein said availability parameters are  
2 obtained dynamically from said network.

1 11. (original) A computer readable medium having stored thereon instructions that,  
2 when executed by a processor, cause the processor to perform a method of optimizing  
3 spare component management for a network having a plurality of nodes, comprising:  
4 obtaining availability parameters associated with an inventory of spare  
5 components; and

6 determining a plurality of management configurations in response to said  
7 availability parameters, each of said plurality of management configurations comprising  
8 at least one warehouse node selected from said plurality of nodes and a quantity of spare  
9 components in said inventory to be stored at said at least one warehouse node.

1 12. (original) The computer readable medium of claim 11, further comprising:  
2 selecting at least one warehouse configuration for said plurality of nodes; and  
3 repeating said determining step for each said warehouse configuration.

1 13. (original) The computer readable medium of claim 12, wherein said at least one  
2 warehouse configuration comprises a distributed warehouse configuration and a  
3 centralized warehouse configuration.

1 14. (original) The computer readable medium of claim 11, wherein said inventory of  
2 spare components is defined by a plurality of component types, and said availability  
3 parameters comprise at least one of a failure rate, a minimum repair time, a restocking  
4 time, and a stockout probability associated with each of said plurality of component types.

1 15. (original) The method of claim 4, further comprising:  
2 for each of said plurality of management configurations, computing an expected  
3 downtime of said network using said minimum repair time associated with at least one of  
4 said plurality of component types.

1 16. (original) The computer readable of claim 15, wherein, for each of said plurality  
2 of management configurations, said expected downtime of said network is further  
3 computed using delivery times from said at least one warehouse node to remaining ones  
4 of said plurality of nodes.

1 17. (original) The computer readable medium of claim 14, further comprising:  
2 obtaining a critical repair time associated with each of said plurality of component  
3 types; and

4           for each of said plurality of management configurations, computing a number of  
5   expected critical repair time violations.

1   18.   (original) The computer readable medium of claim 14, wherein said determining  
2   comprises:

3           obtaining a target stockout probability for each of said plurality of component  
4   types;

5           for each of said plurality of management configurations, computing said quantity  
6   of spare components to be stored at said at least one warehouse node by adjusting a  
7   quantity of each of said plurality of component types until said respective stockout  
8   probability is less than or equal to said respective target stockout probability.

1   19.   (original) An apparatus for optimizing spare component management for a  
2   network having a plurality of nodes, comprising:

3           means for obtaining availability parameters associated with an inventory of spare  
4   components; and

5           means for determining a plurality of management configurations in response to  
6   said availability parameters, each of said plurality of management configurations  
7   comprising at least one warehouse node selected from said plurality of nodes and a  
8   quantity of spare components in said inventory to be stored at said at least one warehouse  
9   node.

1   20.   (original) A system optimizing spare component management for a network  
2   having a plurality of nodes, comprising:

3           a processing unit having access to one or more storage devices;

4           at least a portion of the one or more storage devices storing an inventory of spare  
5   components and availability parameters associated with said inventory;

6           at least another portion of said one or more storage devices having a program  
7   product configured to determine a plurality of management configurations in response to  
8   said availability parameters, each of said plurality of management configurations  
9   comprising at least one warehouse node selected from said plurality of nodes and a

- 10 quantity of spare components in said inventory to be stored at said at least one warehouse
- 11 node.